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10/007,276	11/12/2001	Makoto Nishigaki	450100-03614	6917

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EXAMINER	
BATTAGLIA, MICHAEL V	
ART UNIT	**PAPER NUMBER**
2652	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,276	NISHIGAKI, MAKOTO	
	Examiner	Art Unit	
	Michael V Battaglia	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,4-11 and 13* is/are rejected.

7)☒ Claim(s) *12 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Applicant's amendment, filed August 16, 2004. Claims 1 and 4-14 are pending.

Drawings

1. The corrected drawings were received on August 16, 2004. These drawings are acceptable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (hereafter AAPA) in view of Baba et al (hereafter Baba) (US 4,703,468).

In regard to claim 1, AAPA discloses a playback apparatus for reproducing data recorded on a disk medium by using an optical pickup (Fig. 1, element 3), said playback apparatus comprising: RF signal generating means (Fig. 1, element 4) for generating an RF signal on the basis of an analog signal outputted by said optical pickup; data signal generating means (Fig. 1, element 7) for generating a data signal by binarizing said RF signal; defect signal generating means (Fig. 1, element 8) for generating a defect signal for indicating a defect on said disk medium on the basis of said RF signal; focus error signal generating means (Fig. 1, element 5) for generating a focus error

signal on the basis of said analog signal outputted by said optical pickup; focus servo control means (Fig. 1, element 9) for controlling a focus servo of said optical pickup in response to said focus error signal; tracking error signal generating means (Fig. 1, element 6) for generating a tracking error signal on the basis of said analog signal outputted by said optical pickup; tracking servo control means (Fig. 1, element 11) for controlling a tracking servo of said optical pickup in response to said tracking error signal; monitoring means (Fig. 1, elements 9 and 11) for monitoring said defect signal and thereby detecting a start and an end of a defect period; defect period processing control means for controlling said focus servo control means and said tracking servo control means so that said focus servo control means and said tracking servo control means perform defect period processing when a result of the monitoring by said monitoring means indicates said defect period (Page 3, lines 11-18), wherein the defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus error signal and said tracking error signal of said optical pickup is held at a previous value (Figs. 2C and 2E; Page 3, lines 11-18; and Page 4, lines 5-12); and post-defect period processing control means for controlling said focus servo control means and said tracking servo control means so that said focus servo control means and said tracking servo control means perform post-defect period processing when a result of the monitoring by said monitoring means indicates the end of said defect period (Page 3, lines 6-11). The focus and tracking servo control means monitor the defect signal and output signals dependent on the start and the end of a defect period. AAPA does not disclose that the post-defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus servo and said tracking servo of said optical pickup is driven with an increased servo gain.

Baba discloses lowering a servo gain (Fig. 6(e), element E) of a tracking servo control means (Fig. 7, element 3 and Col. 4, lines 39-43) during defect period processing to lower the responsiveness of a tracking servo for prevention of track jumps due to a defect on the disc medium (Col. 4, lines 19-22 and 30-32). Post-defect processing controls the tracking servo control means so that the tracking servo of the optical pickup (Fig. 7, element 2) is driven with an increased servo gain (Fig. 6(e)). It is noted that the processing period after the defect processing is interpreted as the post-defect period processing and the servo gain during post-defect period processing is interpreted as increased because the servo gain is increased from the level of servo gain during the defect period processing (Fig. 6(e)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lower the servo gain of the tracking servo control means of AAPA during the defect period processing of AAPA and for the post-defect period processing of AAPA to include controlling the tracking servo control means so that the tracking servo of the optical pickup of AAPA is driven with an increased servo gain as suggested by Baba, the motivation being to prevent track jumps due to a defect on the disc medium by lowering the responsiveness of the tracking servo.

In regard to claim 4, AAPA discloses that when said monitoring means detects the start of said defect period during said post-defect period processing performed under control of said post-defect period processing control means, said post-defect period processing control means stops said post-defect period processing, and said defect period processing control means starts said defect period processing (Figs. 2A-2F). It is noted that post-defect processing is interpreted as including the normal operation of the playback apparatus after defect detection and defect processing.

In regard to claims 5 and 6, AAPA discloses a playback method for a playback apparatus, said playback apparatus reproducing data recorded on a disk medium by using an optical pickup, said playback method comprising: an RF signal generating step for generating an RF signal on the basis of an analog signal outputted by said optical pickup (Fig. 1, element 4); a data signal generating step for generating a data signal by binarizing said RF signal (Fig. 1, element 7); a defect signal generating step for generating a defect signal for indicating a defect on said disk medium on the basis of said RF signal (Fig. 1, element 8); a focus error signal generating step for generating a focus error signal on the basis of said analog signal outputted by said optical pickup (Fig. 1, element 5); a focus servo control step for controlling a focus servo of said optical pickup in response to said focus error signal (Fig. 1, element 9); a tracking error signal generating step for generating a tracking error signal on the basis of said analog signal outputted by said optical pickup (Fig. 1, element 6); a tracking servo control step for controlling a tracking servo of said optical pickup in response to said tracking error signal (Fig. 1, element 11); a monitoring step for monitoring said defect signal and thereby detecting a start and an end of a defect period (Fig. 1, elements 9 and 11); a defect period processing control step for controlling processing of said focus servo control step and processing of said tracking servo control step so that defect period processing is performed when a result of the monitoring by processing of said monitoring step indicates said defect period (Page 3, lines 11-18), wherein the defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus error signal and said tracking error signal of said optical pickup is held at a previous value (Figs. 2C and 2E; Page 3, lines 11-18; and Page 4, lines 5-12); and a post-defect period processing control step for controlling the processing of said focus servo control step and the processing of said tracking servo control step so that post-defect period processing is performed

when a result of the monitoring by the processing of said monitoring step indicates the end of said defect period (Page 3, lines 6-11). The defect signal is monitored by the focus and tracking servo control step, which output signals dependent on the start and the end of a defect period. The playback method is inherently recorded as a computer readable playback program on a recording medium because the playback apparatus of Fig. 1 functions by carrying out a playback program to reproduce data. It is noted that an optical disc, a semiconductor board, an electrical circuit, and anything capable of storing a program or function is interpreted as a recording medium. AAPA does not disclose that the post-defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus servo and said tracking servo of said optical pickup is driven with an increased servo gain.

Baba discloses lowering a servo gain (Fig. 6(e), element E) in a tracking servo control step during defect period processing to lower the responsiveness of a tracking servo for prevention of track jumps due to a defect on the disc medium (Col. 4, lines 19-22 and 30-32). Post-defect processing controls the tracking servo control step so that the tracking servo of the optical pickup (Fig. 7, element 2) is driven with an increased servo gain (Fig. 6(e)). It is noted that the processing period after the defect processing is interpreted as the post-defect period processing and the servo gain during post-defect period processing is interpreted as increased because the servo gain is increased from the level of servo gain during the defect period processing (Fig. 6(e)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lower the servo gain in the tracking servo control step of AAPA during the defect period processing of AAPA and for the post-defect period processing of AAPA to include controlling the tracking servo control step so that the tracking servo of the optical pickup of AAPA

is driven with an increased servo gain as suggested by Baba, the motivation being to prevent track jumps due to a defect on the disc medium by lowering the responsiveness of the tracking servo.

In regard to claim 10, AAPA in view of Baba discloses that the tracking servo of the optical pickup is driven with increased servo gain during the post-defect period (see rejection of claim 1 above). The inherent controller that accomplishes this is interpreted as the claimed second post-defect control unit.

3. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted AAPA in view of Baba as applied to claim 1 above, and further in view of Sasaki et al (hereafter Sasaki) (US 5,623,465).

AAPA in view of Baba discloses the playback apparatus of claim 1. AAPA discloses that the tracking and focus error signals are held at the previous value during defect period processing (Figs. 2C and 2E). AAPA does not explicitly disclose the focus error signal previous value hold unit (claim 7) or the tracking error signal previous value hold unit (claim 9) to hold the focus and tracking error signals respectively at their previous value during the defect processing.

Sasaki discloses a playback apparatus having a focus error signal previous value hold unit (Fig. 4, element 67) and a tracking error signal previous value hold unit (Fig. 4, element 66) to hold the focus and tracking error signals respectively at their previous value during the defect processing to prevent the apparatus from going into an out-of-servo state (Col. 5, line 58-Col. 6, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to hold the focus and tracking error signals at their previous value during the defect processing of AAPA using the focus error signal previous value hold unit and the tracking error signal previous value hold unit of Sasaki, the motivation being to hold the error signals and prevent the apparatus from going into an out-of-servo state in a manner known in the art.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Baba as applied to claim 1 above, and further in view of Takao (US 4,764,860).

AAPA in view of Baba discloses the playback apparatus of claim 1. AAPA in view of Baba does not disclose that a first post-defect servo control unit to drive the focus servo of the optical pickup with an increased servo gain.

Takao discloses a first post-defect servo control unit to drive the focus servo of the optical pickup with an increased servo gain (Col. 9, lines 60-65 and Col. 10, lines 14-15) to variably control the servo loop gain in accordance with defect detection for satisfaction of anti-vibration characteristics and tracing capabilities (Col. 10, lines 26-30). The focus servo is driven with an increased servo gain during a post-defect processing period because the focus servo is driven with a decreased focus servo during a defect processing period (Col. 9, lines 60-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the playback apparatus of AAPA in view of Baba the first post-defect servo control unit of Takao to drive the focus servo of the optical pickup with an increased servo gain, the motivation being to variably control the servo loop gain in accordance with defect detection for satisfaction of anti-vibration characteristics and tracing capabilities.

5. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted AAPA in view of Nagata et al (hereafter Nagata) (US 5,481,526).

In regard to claim 11, AAPA discloses a playback apparatus for reproducing data recorded on a disk medium by using an optical pickup (Fig. 1, element 3), said playback apparatus comprising: RF signal generating means (Fig. 1, element 4) for generating an RF signal on the basis of an analog signal outputted by said optical pickup; data signal generating means (Fig. 1, element 7) for generating a data signal by binarizing said RF signal; defect signal generating means (Fig. 1,

element 8) for generating a defect signal for indicating a defect on said disk medium on the basis of said RF signal; focus error signal generating means (Fig. 1, element 5) for generating a focus error signal on the basis of said analog signal outputted by said optical pickup; focus servo control means (Fig. 1, element 9) for controlling a focus servo of said optical pickup in response to said focus error signal; tracking error signal generating means (Fig. 1, element 6) for generating a tracking error signal on the basis of said analog signal outputted by said optical pickup; tracking servo control means (Fig. 1, element 11) for controlling a tracking servo of said optical pickup in response to said tracking error signal; monitoring means (Fig. 1, elements 9 and 11) for monitoring said defect signal and thereby detecting a start and an end of a defect period; defect period processing control means for controlling said focus servo control means and said tracking servo control means so that said focus servo control means and said tracking servo control means perform defect period processing when a result of the monitoring by said monitoring means indicates said defect period (Page 3, lines 11-18), wherein the defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus servo and said tracking servo is held at an undisclosed reference level (Figs. 2C and 2E; Page 3, lines 11-18; and Page 4, lines 5-12); and post-defect period processing control means for controlling said focus servo control means and said tracking servo control means so that said focus servo control means and said tracking servo control means perform post-defect period processing when a result of the monitoring by said monitoring means indicates the end of said defect period (Page 3, lines 6-11). The focus and tracking servo control means monitor the defect signal and output signals dependent on the start and the end of a defect period. AAPA does not disclose that the defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus servo and said tracking servo is not energized.

Nagata discloses a zero potential tracking drive signal output (Figs. 2 and 4, element S34) from a tracking servo control means (Fig. 2, elements 32 and 34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the reference value at which the tracking servo of AAPA is held during the defect period processing to be zero potential as suggested by Nagata, the motivation being for the reference level at which the tracking servo is held during the defect period processing to be a level known in the art for tracking drive signals. It is noted that when the reference level at which the tracking servo is held during the defect period processing is at zero potential, the defect period processing includes controlling said focus servo control means and said tracking control means so that at least one of said focus servo and said tracking servo is not energized.

In regard to claim 13, AAPA discloses a playback method for a playback apparatus to reproduce data recorded on a disk medium by using an optical pickup, the method comprising: an RF signal generating step for generating an RF signal on the basis of an analog signal outputted by said optical pickup (Fig. 1, element 4); a data signal generating step for generating a data signal by binarizing said RF signal (Fig. 1, element 7); a defect signal generating step for generating a defect signal for indicating a defect on said disk medium on the basis of said RF signal (Fig. 1, element 8); a focus error signal generating step for generating a focus error signal on the basis of said analog signal outputted by said optical pickup (Fig. 1, element 5); a focus servo control step for controlling a focus servo of said optical pickup in response to said focus error signal (Fig. 1, element 9); a tracking error signal generating step for generating a tracking error signal on the basis of said analog signal outputted by said optical pickup (Fig. 1, element 6); a tracking servo control step for controlling a tracking servo of said optical pickup in response to said tracking error signal (Fig. 1, element 11); a monitoring step for monitoring said defect signal and thereby detecting a start and

an end of a defect period (Fig. 1, elements 9 and 11); a defect period processing control step for controlling processing of said focus servo control step and processing of said tracking servo control step so that defect period processing is performed when a result of the monitoring by processing of said monitoring step indicates said defect period (Page 3, lines 11-18), wherein the defect period processing includes controlling said focus servo control step and said tracking control step so that at least one of said focus servo and said tracking servo is held at an undisclosed reference level (Figs. 2C and 2E; Page 3, lines 11-18; and Page 4, lines 5-12); and a post-defect period processing control step for controlling the processing of said focus servo control step and the processing of said tracking servo control step so that post-defect period processing is performed when a result of the monitoring by the processing of said monitoring step indicates the end of said defect period (Page 3, lines 6-11). The defect signal is monitored by the focus and tracking servo control step, which output signals dependent on the start and the end of a defect period. AAPA does not disclose that the defect period processing includes controlling said focus servo control step and said tracking control step so that at least one of said focus servo and said tracking servo is not energized.

Nagata discloses a zero potential tracking drive signal output (Figs. 2 and 4, element S34) from a tracking servo control step (Fig. 2, elements 32 and 34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the reference value at which the tracking servo of AAPA is held during the defect period processing to be zero potential as suggested by Nagata, the motivation being for the reference level at which the tracking servo is held during the defect period processing to be a level known in the art for tracking drive signals. It is noted that when the reference level at which the tracking servo is held during the defect period processing is at zero potential, the defect period

processing includes controlling said focus servo control step and said tracking control step so that at least one of said focus servo and said tracking servo is not energized.

Citation of Relevant Prior Art

6. Mukai et al (US 4,688,202) (Fig. 2) and Matsumoto (US 4,722,079) (Fig. 4) disclose lowering servo gain during defect period processing and subsequently increasing the servo gain from the lowered state during post-defect period processing. Oshima (US 5,436,877) (Col. 5) and Dakin et al (US 4,701,603) (Col. 4) disclose increasing servo gain to better stabilize the systems. Ishii et al (US 5,245,599) discloses lowering loop gain to reduce the influence of noise (Col. 2).

Allowable Subject Matter

7. Claims 12 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the references of record alone or in combination suggest or fairly teach a playback method for a playback apparatus, or a playback apparatus with means to implement the steps of the playback method, to reproduce data recorded on a disk medium by using an optical pickup, the method comprising: an RF signal generating step for generating an RF signal on the basis of an analog signal outputted by said optical pickup; a data signal generating step for generating a data signal by binarizing said RF signal; a defect signal generating step for generating a defect signal for indicating a defect on said disk medium on the basis of said RF signal (Fig. 1, element 8); a focus error signal generating step for generating a focus error signal on the basis of said analog signal outputted by said optical pickup; a focus servo control step for controlling a focus servo of said optical pickup in response to said focus error signal; a

tracking error signal generating step for generating a tracking error signal on the basis of said analog signal outputted by said optical pickup; a tracking servo control step for controlling a tracking servo of said optical pickup in response to said tracking error signal; a monitoring step for monitoring said defect signal and thereby detecting a start and an end of a defect period; a defect period processing control step for controlling processing of said focus servo control step and processing of said tracking servo control step so that defect period processing is performed when a result of the monitoring by processing of said monitoring step indicates said defect period, wherein the defect period processing includes controlling said focus servo control step and said tracking control step so that at least one of said focus servo and said tracking servo is not energized; and a post-defect period processing control step for controlling the processing of said focus servo control step and the processing of said tracking servo control step so that post-defect period processing is performed when a result of the monitoring by the processing of said monitoring step indicates the end of said defect period; **wherein said post-defect period processing control step includes resetting the length of the post-defect period processing to an initial value to prevent the post-defect period processing from being ended within less than a specified time.**

Response to Arguments

8. Applicant's arguments with respect to claims 1 and 4-6 have been considered but are moot in view of the new ground(s) of rejection. In the arguments, Applicant notes that AAPA teaches against increasing a servo loop gain to a higher-than-normal level because it makes the servo too sensitive to detect flaws on the optical disc. It is noted that in the rejections of claims 1, 5 and 6

above, AAPA in view of Baba increases the servo loop gain to a normal level from a lower-than-normal level.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Battaglia

BRIAN E. MILLER
PRIMARY EXAMINER